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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|---|---|---|---|---|
| 10/803,007 | 03/17/2004 | Xubin Song | 10541-1931 | 4391 |

29074 7590 05/15/2007

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| EXAMINER | |
|---|---|
| PIPALA, EDWARD J | |

| ART UNIT | PAPER NUMBER |
|---|---|
| 3663 | |

| MAIL DATE | DELIVERY MODE |
|---|---|
| 05/15/2007 | PAPER |

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

| Office Action Summary | Application No. | Applicant(s) | |
|---|---|---|---|
| | 10/803,007 | SONG, XUBIN | |
| | Examiner | Art Unit | |
| | Edward Pipala | 3663 | |

*-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --*

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

1)☒ Responsive to communication(s) filed on *14 February 2007*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

4)☒ Claim(s) *1-9,11 and 13-17* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-9,11 and 13-17* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

**Application Papers**

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *17 March 2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

## DETAILED ACTION

1. This Office action is in response to Applicant's amendments and remarks filed 2/14/07.

The rejection of claims 12-17 under 35 U.S.C. 112, second paragraph, has been withdrawn in view of Applicant's amendments and remarks.

The rejection of claims 1-3 and 7-12 under 35 U.S.C. 102(b) has been withdrawn in view of Applicant's amendments and remarks with respect thereto.

Claims 10, 12 and 18-27 have been canceled, claims 1-9, 11 and 13-17 are presently pending.

### *Claim Rejections - 35 USC § 103*

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1-9, 11 and 13-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Leaphart et al. in view of Majeed et al. (5,897,130).

Leaphart et al. disclose a vehicle chassis control system in which the relative velocity between a corner of a vehicle body and a vehicle wheel is determined through the use of a of a relative position sensor mounted between the vehicle body corner and the vehicle wheel (as shown in figure 1, element 15), where the position information is then used as shown in figure 2 (elements 100, 102) to determine both the relative

velocities of the corners of the vehicle as well as body modal velocities (relating to heave, pitch and roll of the vehicle). Figure 1 also shows the use of a suspension controller (52) which in communication with the plurality of sensors and actuates controllable damper (21) so as to effect variable force real time control as taught in col. 3, ll. 51-61.

Even though Leaphart et al., teaches determining doing so as part of a vehicle chassis control system, Leaphart et al. does not precisely define a third frequency based on a proportion of the first frequency amplitude (displacement/position based), and second frequency ampliture based on a body relative velocity to calculate a third frequency based on a proportion of the first and second amplitudes.

Majeed et al. ('130) discloses a vehicle chassis control system having a suspension controller (50) and variable force real time controllable dampers (21), and in column 7, line 16 through column 9, line 32 discloses equations for determining a relative heave velocity (col. 7, ll. 40-47), relative roll velocity (col. 8, ll. 33-40), and relative pitch velocity (col. 9, ll. 3-10). Furthermore, in col. 11, lines 38-60 Majeed et al. ('130) further discloses determination of body modal velocities of heave, pitch and rollas geometric transforms, where the signals are then filtered, and that scale factors may be easily determined as the ratio of actual measured body modal velocities using accelerometers or other types of sensors.

Accordingly, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have implemented the equations taught by Majeed et al. ('130), within the context of the vehicle chassis control system of Leaphart et al. by replacing the wheel speed values for each of the corners of the vehicle with the relative

velocity values for each of the corners as taught by Leaphart et al. when determining heave pitch and roll velocities and ratios thereof, because Majeed et al. ('130) expressly teaches that such body modal velocities can be determined using different types of sensors in addition to or in place of the relative position sensors of Leaphart et al., in order to perform vehicle suspension control with respect to heave, pitch and roll movements of a vehicle.

With respect to claims 2, 3 and 7, relating to a derivative filter for generating strut relative velocity from the displacement signals and therefrom also determining body relative velocities, please see col. 4, line 60 through about col. 5, line 45, wherein it is taught that the relative velocity signals are used to or for indicating the relative heave, roll and pitch velocities between the vehicle body and the wheels (the latter portion of which indicates that these body components are generally in the 1 Hz range).

With respect to claims 4-6, reciting calculation of body relative heave velocity, body relative heave velocity and body relative roll velocities, respectively, please see above noted columns 7-9 of Majeed et al. ('130) which discloses similar equations for determining heave, pitch and roll, in view of which one of ordinary skill in the art would recognize Applicant's actual equations as obvious.

With respect to claims 8, 9 and 11 relating to extracting a first frequency amplitude based on body relative velocity (claim 8), applying a high pass filter before extracting said body relative velocity (claim 9), applying a low pass filter to the body relative velocity before extracting said second amplitude (claim 11), please again see column 4, line 60 through column 5, line 46, as well as col. 5, line 65 through col. 6, line 38, and column 7, lines 23 through 67 of Leaphart et al.

### *Response to Arguments*

3. Applicant's arguments filed 2/14/07, with respect to the previous rejections under 35 U.S.C. 112 2nd and 35 U.S.C. 102(b) have been fully considered and those rejections withdrawn.

However, Applicant's arguments with respect to the combination of Leaphart et al. and Majeed et al. ('130) have not been deemed persuasive, and presently remaining claims 1-9, 1, and 13-17 are rejected as being obvious under 35 U.S.C 103(a) as discussed in the detailed rejection above.

### *Conclusion*

**THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Edward Pipala whose telephone number is 571-272-1360. The examiner can normally be reached on M-F 9-5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jack Keith can be reached on 571-272-6878. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

ejp

JACK KEITH
SUPERVISORY PATENT EXAMINER